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**United States Patent** [19][11] **Patent Number:** **5,303,073**

Shirota et al.

[45] **Date of Patent:** **Apr. 12, 1994****[54] DISPERSION-TYPE LIQUID CRYSTAL  
DISPLAY ELEMENT WITH ORIENTED  
DICHROIC DYE IN THE SUPPORT MEDIA**

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[58] Field of Search ..... **359/51, 52, 53, 96,  
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**[57] ABSTRACT**

A liquid crystal display element having a pair of substrates at least one of which is transparent, and a light control layer consisting of a dispersion type liquid crystal material held between the substrates. The dispersion type liquid crystal material consists of a supporting medium, liquid crystal molecules and a dichromatic dye which is oriented within the supporting medium. It is desirable to arrange a polarized light selecting element to cover the outer surface of one of the substrates. In one embodiment, the light control layer is of a laminate structure consisting of a first dispersion type liquid crystal layer prepared by allowing the dichromatic dye to be dispersed and oriented in a first direction within the supporting medium and a second dispersion type liquid crystal layer prepared by allowing another dichromatic dye, which is of the same type as that of the dichromatic dye dispersed in the first dispersion type liquid crystal layer, to be dispersed and oriented in a second direction within the supporting medium.

**20 Claims, 2 Drawing Sheets**